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LECTURES.

ON THE PHYSIOLOGY OF THE SPINAL CORD.

DELIVERED AT THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK,
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[REPORTED BY P. BRYNBERG PORTER, M. D.]

I.

THE PHYSIOLOGICAL ANATOMY OF THE SPINAL CORD AND NERVES.

THE spinal cord is the first and most essential part of the cerebrospinal system. The latter is so called because it consists of the brain and spinal cord, and because its centres are contained in the cranial and spinal cavities. The nervous ganglia composing the brain and spinal cord are massed together, and in this respect they are unlike those of the sympathetic system, which are scattered over a wide territory. The brain is one great mass occupying the cranial cavity, while the spinal cord is a second, inclosed in the spinal canal.

We shall find, on examination, that the brain consists of a series of double ganglia, extending from the anterior to the posterior portion of the cavity in which it is contained, and the same is also true of the spinal cord. If you will look at this preparation of the cerebro-spinal system of a frog, you will see that it commences anteriorly in a series of cerebral ganglia, and that these are followed by the spinal cord, the whole forming a continuous tract. The same thing can be observed in this brain and spinal cord taken from a rabbit, and you will notice in the latter specimen that the brain corresponds in anatomical characteristics and arrangements, though not in its relative size, with the human brain, while the spinal cord can be seen running downward in a cylindrical form.

In these two parts of the cerebro-spinal system the nervous centres constitute, apparently, a unit; but when we examine the matter particularly we shall find that the spinal cord and brain are in reality distinct centres of motion and sensation. I take up the spinal cord first because it is the least complicated portion of the cerebro-spinal system. It is the simplest in its construction and the simplest in its physiological attributes. You are familiar with its form, which may be described in general terms as a cylinder extending from one end of the spinal canal to the other. This description, however, is not strictly accurate, as the cord is nowhere exactly cylindrical, and is not of exactly the same form at any two points of its length. Look, for instance, at these diagrams of transverse sections at different parts of the cord, and you will see that they are very unlike in size and shape, and that they also present essential differences as regards their internal structure. Again, the cord may be described in general terms as tapering gradually from above downwards, but still it presents very distinct contractions and dilatations at various points. These, you will find, correspond closely with the origins of certain groups of spinal nerves.

In the diagram which I now exhibit we see that the spinal cord gives off successive pairs of nerves, and that these nerves are characterized by a great regularity of origin and distribution as compared with those of the brain and the sympathetic system. There are thirty-one pairs, which follow each other in pretty regular order. In such creatures as fishes and serpents (animals whose movements of locomotion are caused by alternate flexions of the spinal column, and not by any extremities or limbs) the spinal nerves are sent off with the utmost regularity. Fishes, it is true, are provided with fins, but these fins are not organs of propulsion. In animals of this character, therefore, the spinal nerves are almost all alike in size and regular in distribution. In quadrupeds and in man, on the other hand, there is this peculiarity: that the anterior and posterior limbs, or the arms and legs, concentrate in themselves most of the muscular activity of the body, as well as a large share of its tactile sensibility. In consequence of this we find a corresponding variation in the size of the spinal nerves; those which supply the limbs being larger than those which go to other parts. Thus, the cervical nerves, which form the brachial plexus, and the lumbar nerves, distributed to the lower extremities, are of a much greater size than those given off in the dorsal region, which supply the trunk.

In addition, it is noticed that the cord itself presents two marked enlargements in the cervical and lumbar regions, where the nerves are given off to the upper and lower limbs. If we examine transverse sections of the cord at different levels, we shall at once see these enlargements corresponding with the points where special nerves issue from it. In this spinal cord of the rabbit you perceive the points of enlargement in the cervical region, where the cervical and brachial nerves originate, and in the lumbar region, where the nerves are given off to the lower extremities. Yet these enlargements are by no means so marked in the rabbit as in many other animals. In fishes or serpents, on the other hand, the cord would be found to taper quite regularly to its lower extremity.

Such are some of the general features of the spinal cord. I have now to add that it is divided symmetrically by an anterior median fissure and a posterior median fissure, which separate it externally into right and left lateral halves, though internally these two divisions are connected by continuity of structure.

We come next to inquire, What is the internal structure of the cord? Like the brain, it is made up of white and gray matter, though it differs from the brain in having its gray matter inside and its white matter outside. This is the general arrangement of the nervous tissues in the cord, but we wish to know their particular distribution and the special arrangement of the nerve fibres and cells. I will first call your attention to the main features of this distribution, and then endeavor, as far as possible, to describe the minute structure of the parts. To begin with, what is the direction of the fibres in the white substance of the cord? This is to be ascertained by the microscopical examination of transverse sections which have been hardened for the purpose; and it is shown by this means that almost all the fibres run in a longitudinal direction. There is scarcely an exception in this particular until we come to that portion of the white substance situated at the bottom of the anterior median fissure. On each side of the cord the longitudinal bands of fibres extend from one end to the other, and in consequence of its division into two lateral halves by the anterior and posterior median fissures, and, still further, by the division of each half into three parts by the peculiar form of the gray matter in the interior, we have the white substance arranged in three distinct columns upon each side. These, from their special situations, are called respectively the anterior, the lateral, and the posterior columns of the cord, and they are all composed exclusively of fibrous bands of white matter, which extend up and down, like the flutings of a column, and are entirely symmetrical on the two sides. The preparation which I show here is a portion, several inches in length, of the spinal cord of an ox, which has been hardened in alcohol (a method often of considerable service), so that we can strip off its fibres and see in what direction they run. In this manner, you perceive, the fibres of one of the posterior columns have been torn off longitudinally. The arrangement of the fibres can be still more satisfactorily demonstrated in transverse sections of the cord made for microscopical examination. It is known that the albuminous axis-cylinder of the nerve fibre has a tendency to become stained with carmine if immersed in a solution of this substance, while the medullary layer remains colorless. Such a specimen will therefore exhibit minute red circular points, the transverse sections of the axis-cylinders, surrounded by transparent colorless circles, which are the sections of the medullary layers. An oblique section of the cord will also show the proportion and arrangement of its constituent substances.

If we make a transverse section of the spinal cord at any point we shall see its internal structure to be such as is represented in this model. The form of its central portion, composed of gray matter, resembles in a general way the letter X. It may be described more correctly as presenting the figure of two crescents with their concavities turned outward, and having their convexities united across the median line by a transverse band of the same substance. This connecting band is known as the *gray commissure* of the cord. The central or ganglionic part of the cord consists, then, of two elongated ribbons, folded outward in a trough-like manner, and united throughout their entire length by a transverse band. In addition we find, on examining the cord throughout its whole extent, that this central gray matter varies not only in form but in quantity at different points. Still, the gray matter does not taper uniformly towards the lower extremity of the cord. The white substance, on the other hand, does taper pretty gradually, as we might naturally be led to expect from the successive origin of the spinal nerves all the way down the cord. These facts are shown in the diagram to which I now direct your attention, and which exhibits transverse sections of the cord made respectively in the upper cervical, the lower cervical, the middle dorsal and the lumbar regions. From these it is evident that the gray matter is greatly increased in quantity at the seat of the cervical and lumbar enlargements of the cord, where it acts as a nervous centre for the upper and lower extremities, while the white matter diminishes gradually as we descend, until at last almost the entire area of the cord is occupied by gray matter.

One point more of a purely anatomical character, and that is in regard to the mode of origin of the spinal nerves. Each nerve is composed of a considerable number of filaments, which pass directly outward from the cord. Furthermore, these filaments are arranged in two distinct sets, which issue, one from the anterior portion, and one from the posterior portion of the cord. If, therefore, a transverse section be made just where any of these nerve roots are given off, it may be seen exactly how they emerge. In each lateral half of the cord the portions of gray matter in the anterior and posterior divisions respectively are called the anterior and posterior cornua or horns. The anterior horns terminate within the substance of the cord, but the posterior horns reach nearly or quite to its external surface. The origins of the spinal nerve roots correspond in situation with the anterior and posterior horns of gray matter. The specimen which I here show is a portion of the spinal cord from the lower cervical and upper dorsal regions in the human subject, and I wish to notice particularly two points in regard to the nerves which are attached to it: the first is that the anterior roots continue of uniform size quite to their junction with the posterior roots; and the second, that upon the posterior roots, between the points of leaving the cord and their junction with the anterior, there are enlargements of a rounded form. These enlargements are small ganglia, composed of gray matter. They are never found on the anterior roots, and are never absent from the posterior roots, so that this feature makes it easy always to distinguish the two roots from each other. After the two roots become united, their fibres are so intermingled that it is impossible to separate them anatomically.

These are the most prominent points of the physiological anatomy of the spinal cord, but of course we wish to know something more of its internal structure, the connections, origins, and terminations of its component parts, and of the nerves springing from it. Of late years great advances have been made in this field by the microscopical examination of transverse and longitudinal sections of the cord, particularly in connection with artificial staining of its tissues. This diagram represents such a transverse section of the spinal cord. You observe that at least nineteen twentieths of its white matter is composed of longitudinal fibres, forming the anterior, lateral, and posterior columns. There is, however, at the bottom of the anterior median fissure a band of white matter composed of transverse fibres. This band is known as the *white commissure* of the cord, and the question arises, Is it really a commissure, or is it a decussation? On first observing the arrangement of its fibres we might be led to consider it as a true commissure passing between the lateral halves of the cord from right to left, and *vice versâ*. But a more careful examination will reveal the fact that its fibres do not connect exactly corresponding parts of the two halves of the cord. On the contrary, the fibres of the white commissure, coming from the anterior column of one side, cross over to the anterior horn of gray matter on the opposite side, and there lose themselves in its structure; so that, beyond doubt, the transverse fibres of the white commissure serve to connect the white substance of either side of the cord with the gray substance of the other side, throughout its entire length. There is, however, no corresponding white commissure at the bottom of the posterior median fissure, and the posterior columns therefore appear quite disconnected from each other in a transverse section.

Let us now try to ascertain the real source and connections of the anterior and posterior roots of the spinal nerves. Where do they originate, and whither do they go? In the first place, it is evident that the anterior roots as they are given off by the cord, pass directly from the anterior horns of gray matter, and that the posterior roots pass directly from the posterior horns. But when we have said this we have stated pretty much all that is definitely known at present in regard to the subject. If a transverse section of the cord be made at the level of the origin of any pair of spinal nerves, the anterior root fibres of the latter will be seen to issue from the anterior horns of gray matter, and thence extend forward through the anterior column to the surface of the cord. There is no question, therefore, that the root-fibres are connected, first with the anterior column, and next with the anterior horn of gray matter, on the side where the nerve originates, though, according to some of the best microscopists, certain fibres can be traced through the gray matter into the lateral columns. Our knowledge on these points is still quite incomplete, notwithstanding all the time and labor that have been bestowed upon them; but no earnest student of physiology will ever remain satisfied until the exact origins of all the spinal nerve fibres are conclusively demonstrated.

From what has now been said we see that the spinal cord is to be regarded, —

First, as an organ of nervous communication, proceeding from the brain and connected with various parts of the body by means of the spinal nerves.

Secondly, as a nervous centre, having an internal deposit of gray matter enveloped in the external covering of white substance.

It is the simplest of the two great divisions of the cerebro-spinal system, forming an extended cord-like mass inclosed in the spinal cavity. It consists of two lateral halves, separated by the anterior and posterior median fissures, each half containing both white and gray matter, the former being exterior and the latter interior. On each side it presents three columns, the anterior, the lateral, and the posterior. The anterior and posterior horns of gray matter on each side are connected with those on the other by the central band of gray substance called the *gray commissure;* and there is also in front of this a transverse band of white matter, known as the *white commissure.* Thirty-one pairs of nerves are given off from the spinal cord, each nerve springing from two roots, the fibres of the anterior root coming from the anterior horn of gray matter, and those of the posterior root from the posterior horn. Finally, each posterior root is distinguished from the corresponding anterior root by a small ganglion through which its fibres pass after emerging from the substance of the cord.

A PECULIAR CONDITION OF THE CERVIX UTERI WHICH IS FOUND IN CERTAIN CASES OF DYSTOCIA.[1]

BY ALFRED HOSMER, M. D. HARV., WATERTOWN.

Of the condition to which I allude few practitioners, I think, have ever heard or thought, and it is not very many months since it first came to my own knowledge as an alarming and troublesome novelty. I am free to confess that I then failed, as it now seems to me, to apprehend its true nature, and for that reason I feel justified in again calling the attention of the society to the subject. And still further, I doubt very much if the brief report of a single case presented as an oral communication to this body could convey any due impression of the extraordinary and almost inconceivable difficulty — and difficulty is but another name for puerperal danger — which the obstetrician may be forced to meet in connection with this peculiar disposition of the uterine substance. It is a condition of which it may be safely said that it has never received recognition and description in any systematic treatise on midwifery which has found its first expression in the English language. In a general way and under the lead of my own first impressions, I should define it by saying that I have in mind a state of things which, with the hand inside the gravid uterus, imparts to the sense of touch the same idea of form and arrangement that is conveyed to the eye by any well-drawn illustration of the so-called hour-glass contraction, such as may be found in Plate LVIII., Figure 4, of Ramsbotham's system of obstetrics. Of what is there represented every medical man has a distinct notion, and what has hitherto been held to be a correct appreciation. But the opinion which has generally been accepted in this connection must be completely ignored when we come to consider that condition which is to be described in this paper. I make the comparison for the sake of convenience, and not because, when regarded from the ordinary point of view, it has the force of any analogy, or can furnish anything in the way of an anatomical or physiological explanation of the irregularity in question.[1]

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[1] Read at the meeting of the Obstetrical Society of Boston, February 9, 1878.

I expect only to offer a few meagre suggestions, but in doing that I desire the security that comes of standing upon a clinical basis, the broadest that I can command, and I pass at once to the narration of four cases, only one of which I have seen myself, and for all of which I am indebted to the practice of other physicians.

CASE I. Dr. L. R. Stone, of Newton, requested my assistance late in the evening, September 4, 1876. I found a primipara, short, stout, and thirty years of age. She had passed her calculated time, and had then been in labor seventy hours. Her general condition was fair, but the pains had diminished in frequency and strength. The pelvis was narrow, the pubic arch contracted, and the promontory of the sacrum, by its marked projection, encroached very seriously upon the dimensions of the superior strait. The occiput lay towards the right acetabulum, and the head, thrown far forwards over the pubes, formed a prominent mass externally. The os was well dilated and quite out of the way; the parts were moist and of good temperature. The forceps had been already tried, yet it was deemed best to resort once more to the same means. The two portions of the instrument were applied without much trouble, but as soon as traction was made slipped off posteriorly, and for this very simple reason. Such was the disposition of things that both blades, in their whole width, lay entirely to one side of the plane of a long diameter of the head of the child, and thus included not parallel but converging surfaces, the convergence being at right angles with the length of the blades. Next, version was attempted. The hand was not carried up without a good deal of effort; the left foot was seized and brought into the vagina. But no force thus applied could change the position of the child. A loop of tape was then passed around the limb, and upon that we pulled steadily and firmly until we were admonished by the yielding of the tissues about the ankle that that method would effect only the delivery of a small portion of one member. Then the head was opened and emptied of its contents, and the forceps applied to the diminished mass, but neither the use of this or any other instrument at our command resulted in the least progress. It was now decided that version was an absolute necessity, and could be accomplished only by controlling and using both of the lower extremities of the fœtus. The right foot, therefore, must be brought down, and it was during the process of seeking it that a most unexpected difficulty presented itself. Midway between the os and the fundus, in the uterine cavity, there was discovered a powerful constriction, grasping and holding the pelvis of the child like a gigantic sphincter, whose force perhaps was surely to be augmented, through the law of reflex action, by every attempt that was made to overcome and remove it. The ether, under the moderate influence of which the patient had been kept, was now pushed to its utmost. The hand was carried up gently, steadily, perseveringly, and after passing the sharp, distinct, and well-defined edge, which in its continuity made a complete circle, with much difficulty reached the right foot. After a prolonged effort the foot was brought down to the brim of the pelvis, but could be got no farther by the direct use of the hand. A loop of strong tape, guided by the fingers, was then carried up and made fast about the leg; after a considerable time, by dint of the persistent exertion of unusual force, version was accomplished, and a female child, weighing six or seven pounds, was delivered. The placenta was removed with the usual facility. The patient died seventy-two hours afterwards.

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[1] One of the latest authorities thus expresses himself: "One peculiar variety, which has been dwelt on by writers and is a prominent bugbear to obstetricians, is the so-called hour-glass contraction. This in reality seems to depend on spasmodic contraction of the internal os uteri, by means of which the placenta becomes encysted in the upper portion of the uterus, which is relaxed. On introducing the hand it first passes through the lax cervical canal until it comes to the closed internal os, with the umbilical cord passing through it, which has generally been supposed to be a circular contraction of a portion of the body of the uterus." (A Treatise on the Science and Practice of Midwifery, by W. S. Playfair, M. D., page 376.)

In explanation of a certain incompleteness in this record, I will say that I was suddenly confronted with an abnormal form of uterine action of which I knew absolutely nothing. And ignorance is self-perpetuating; with knowledge, as with wealth, possession is the condition of acquisition. The best approach to any subject lies in a fair appreciation of some of its relations. Again, there was an emergency, and with it urgency. The question was not of the complete and thorough scientific study of a case at once interesting and appalling, but rather the practical problem of the best method of relieving an unfortunate woman, who, unless delivery were speedily determined with a reasonable exercise of muscular strength would lose even that benefit of doubt which is always accorded in the simple declaration of existing danger.

CASE II. This includes the history of three labors in the same patient. From full notes furnished by her medical attendant, Dr. George J. Arnold, of Roxbury, I have abridged the following statement: —

On the morning of April 5, 1872, Mrs. W., aged twenty-eight, Irish, strong and healthy, primipara, fell in labor at the termination of a pregnancy throughout which she had been perfectly well. At one o'clock P. M., labor was still in the first stage; on examination the pelvis seemed high and straight; the pectineal line of the os pubis was somewhat prominent, and the promontory of the sacrum especially so. The os uteri admitted only the forefinger, and everything betokened a tedious labor. The evening showed a slight advance, the os being then dilated to the size of a half dollar.

April 6th. The pains had continued all night, but had not altogether prevented sleep. They were now satisfactory in their frequency, force, and duration; the parts were less rigid, and the os two thirds dilated. The patient was cheerful, and in excellent general condition.

At noon the os was fully dilated; occiput to left front. The head advanced but slightly notwithstanding a good pain every five minutes. At three o'clock the pains began to change in their character; they had become short, inefficient, and recurred at irregular intervals, varying from five to fifteen minutes. At ten o'clock in the evening this change in the quality of the uterine contraction was still more marked. The head had only engaged in part in the superior strait, and was quite movable; it was clear that little if any progress had been made since midday. The fœtal movements were active and vigorous.

The mother now began to show unmistakable signs of commencing exhaustion. She was etherized, and forceps were applied, but not without some difficulty, because the larger portion of the head still remained above the brim of the pelvis. Dr. Arnold exerted all his strength, but without changing in the least the position of the head. At last the forceps slipped. The instruments were placed a second time, but, as before, without avail. It was then decided to resort to version. The parts were still very firm, but moist. The conformation of the pelvis rendered it very difficult to introduce the hand so as to pass it along the anterior aspect of the child, which was very close to the posterior wall of the uterus. Before a leg could be found the hand reached what, from the rounded outline, was supposed to be the fundus of the womb. Under the impression that the position of the fœtus might have been mistaken, the hand was partially withdrawn. This question having been settled, the hand was again pushed upwards, and then discovered that what had been at first supposed to be the fundus was really a constriction about the upper third of the uterus, encircling the child and inclosing its hips and lower extremities. It seemed like an hour-glass contraction, and consisted of a large, firm band, with its inner edge quite sharp. Its contact with the child was so close and firm as hardly to permit the passage of the fingers through it. The attempts to seize the feet were laborious, wearisome, and discouraging. It was only accomplished by carrying the arm diagonally across the front of the child and then forcing in the fingers, like wedges, over the hips and sacrum and across the nates. The upper surface of the constriction seemed flat and to the touch suggested the edge of a board or shelf. The hand, now within and beyond it, could not be opened, and the arm was paralyzed and almost useless. After prolonged efforts, one foot being secured at a time, version was accomplished, and the labor was completed with no more difficulty than might be expected in a primipara with an imperfect pelvis. The child, a male weighing nine and a half pounds, was born alive and did well. The patient made a good recovery.

May 21, 1874. The same woman was confined with her second baby, and the obstetric attendant had about the same experience as that just related. The full dilatation was awaited, and then labor was expedited by version. The same constriction existed, and the obstacle which it presented was at last overcome by the same amount of force and persistency that had been required in the first labor. After the delivery of the body it was found to be impossible to extract the head without the aid of the forceps. The child, a male weighing ten and a half pounds, was born alive.

July 16, 1876. Mrs. W. was confined with her third child. She was first visited at one P. M. Labor had commenced the previous evening. The pains had been quite regular all day; the os was soft, patulous, and dilated to the size of a half dollar. Progress was favorable until six P. M., when the os was fully dilated, and each pain seemed to advance the head a little. Soon after, the pains became irregular and uncertain. At ten P. M. signs of exhaustion on the part of the patient demanded immediate interference for her relief. The condition of the parts and the position of the head were so favorable for the application of the forceps that an attempt was made to deliver by this means. But the combined efforts of the two physicians then in attendance were entirely ineffectual. Version was next resorted to. The constriction, already described, was easily detected, and caused quite as much embarrassment and delay as in previous labors. At last turning was accomplished, and the delivery was completed with the forceps. The child, a female weighing eleven pounds, was still-born, and on the fourth day afterward the mother died.

The foregoing cases, forming a portion of the proceedings at one of the meetings of this society, appeared in print[1] October 18, 1877. They at once attracted the attention of a medical gentleman living far away, Dr. C. A. Thompson, of Jefferson City, Mo., who, under date of October 22, gave me a brief statement of a similar case which had come under his own observation, and which he very naturally supposed to be one of ante-partum hour-glass contraction. In concluding that letter he says: —

"I then had no doubts of the true condition. It must be a rare complication in labor, yours being the only case I ever saw reported, and mine the only one I ever met with."

The correspondence which started at this point put me in possession of some extremely interesting facts, and furnished material of the utmost value. It revived and quickened my own interest in the subject, and became the efficient cause of my present effort to know more of one of the most serious deviations from the normal course of labor that I have ever been required to encounter.

Case III. This includes the history of two labors in the same woman, of which the first was finished with uncommon difficulty, while in the second death occurred before delivery could be effected. The patient was of German parentage, above the medium size, and before marriage occupied the position of a servant-girl. Her family record was good, and her own sound health was in no wise impaired by pregnancy. When nearly twenty-two years of age her first labor commenced at term. Her pelvis was well formed and of full capacity. At the end of thirty-six hours the reason why no progress was made was found to be a constriction encroaching upon the uterine cavity, and distinctly marked and felt through the abdominal walls, as well as in every attempt to pass the hand in the efforts at turning. This constriction was situated about one third way from the os to the fundus. The body and limbs of the child, which proved to be not a large one, were contained in the upper uterine chamber, whose capacity was estimated to be twice that of the lower one. Delivery was accomplished with a blunt hook, after craniotomy, forceps, and a thorough trial at version had failed of immediate success. The placenta was attached above the constriction.

Eighteen months later, the patient again fell in labor at full term, and at the end of twelve hours Dr. Thompson discovered the existence of precisely the same condition of things that had been the cause of the difficulty and delay in the former labor. But the obstacle which now presented itself proved to be insuperable, and the unfortunate woman died undelivered. Two months before the second labor, in anticipation of what did actually happen, a careful examination was made of the uterus and other genital organs, but nothing abnormal could be detected. The conclusion, very reasonably accepted by the medical attendant in the case, was that this deformity of the uterus was incident to and coincident with the parturient process. Yet the opinion of uterine malformation was expressed by the consulting physician, a gentleman who for many years had had a large obstetrical practice, and was called at the time of the fatal labor.

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[1] Journal, vol. xcvii., pages 450 and 451.

The case just reported holds an intermediate position between those that precede and one for the notes of which I am indebted to Dr. B. F. D. Adams, of Waltham.

CASE IV. "Mrs. H. was a well-developed woman, thirty years of age, primipara. She was seen in consultation about eight A. M., two physicians being then in attendance. The report was that the patient had been in labor some twelve hours or more, and through the night the pains had been frequent but ineffectual. Forty grains of quinine in four equally divided doses had been given as an oxytocic, without very marked effect upon the progress of the labor.

"On examination the os was found well dilated and out of the way; the head, with the occiput towards the left acetabulum, was high up, and projecting forwards from behind the symphysis pubis formed quite a prominent mass externally. There was nothing unusual in the conformation of the pelvic bones.

"The forceps had been applied satisfactorily under ether, and both gentlemen in turn had used their utmost powers of extraction without producing any effect on the position of the head. It seemed useless to make any further attempts in this direction, and it was determined to turn at once.

"On introducing the hand beyond the brim of the pelvis, the neck of the child was found grasped firmly by a sharply defined circular constriction of the uterus, beyond which the hand could only be passed by the greatest and most persevering effort. One foot was at length grasped, brought down, and secured with a tape, and eventually, after repeated attempts, the other foot was secured; but no amount of traction, assisted by external pressure over the head, overcame in the least the resistance of this constricting band of uterine muscle. Under the impression that this resistance, which seemed to be entirely muscular, would certainly yield to continued traction, an amount of force was used which under other circumstances would be unwarrantable, and was continued until the tissues of the child began to give way.

"The attempt was now made to perforate, but the apparent relaxation of the uterus, which had come on suddenly, and the collapse of the patient warned us to desist and to withdraw the ether. The patient did not rally, but continued to sink rapidly, and in a short time died undelivered.

"At the autopsy, made a few hours after death, the child, a large one, was found lying in the abdominal cavity, having escaped from a bruised laceration of the uterus occurring at the point where pressure had been made upon the head in the attempt at version. There had been little or no hæmorrhage into the abdomen."

In a review of these cases, one of the most striking features is the difficulty, amounting sometimes to the impossibility, of extracting the fœtus. Death overtook two undelivered women. The statistics, although dealing with small figures, attest a fearful mortality. Our clinical record includes four mothers, seven labors, and seven children. The women were all eventually lost; four of the labors were fatal ones, two of them becoming so before delivery. Of the children but two were saved, and both of these, born of the same mother, were of large size. Moderate weight went for nothing in the scale of infant life. Recurrence, although an obvious fact, deserves to be specially mentioned. Unlucky patients survived one or two terrible labors only to perish in a subsequent one. In two of the cases the pelvis exhibited marked deformity, while in the others, in some respects the worst in the series, it is reported to have been "well formed and of full capacity," or to have presented "nothing unusual in its conformation." The annular constriction was a constant and prominent characteristic, and in one instance defined in such a way that there could be felt through the abdominal walls upon the external uterine surface a sulcus or linear depression which corresponded exactly with the intra-uterine projection. As it came to my hand, there is no danger of overstating its firm and unyielding nature; its edge was wonderfully thin and sharp, and its base, in a vertical sense, was not a broad one, but by the law of equivalents its inherent strength may be estimated from the frightful force which it was able to resist. Against it, manipulation seemed to avail nothing; its quality of rigidity was rather suggestive of metal than of muscle, Without stopping just yet to explain its relation with another element with which it is so constantly associated, it is safe to insist upon its serious importance as an acquired and secondary complication in labor, and upon the extreme difficulty and perhaps danger which it may attach to the operation of version.

It should be noted that of the seven labors described above four were those of primiparæ, and that in all the presentation was of the head. The interval of time which elapsed between the commencement of uterine action and the discovery of this peculiar constriction was in the first labor in our series seventy hours; in the second, forty hours; in the third, not given; in the fourth, twenty-four hours; in the fifth, thirty-six hours ; in the sixth, twelve hours ; and in the seventh, twelve hours. The fifth and sixth labors constituted the third case, and the seventh made up the sum total of the fourth one ; and in both of these death occurred before delivery could be accomplished, although the attendants failed to detect in either of them anything wrong in the formation of the pelvis.

The late Dr. George T. Elliott[1] has given, with full detail, three cases in illustration of that condition which he defines as "tonic, circular contraction of uterine fibres," and which he speaks of as "an irregular tetanic uterine cramp of certain fibres."

I refer to them with the assumption, possibly a wrong one, that a proper classification would arrange them side by side with those cases which make up the series that I have presented. Thus much should be said in respect to them : that at least two of the patients were not primiparæ, and that there had been difficulty or delay in all the previous labors, and in those which he describes the children were all lost, although the mothers eventually made good recoveries.

In searching for an explanation of this uterine peculiarity, I think we find a most satisfactory one in the views of Dr. Ludwig Bandl, an obstetrician belonging to the Vienna school. His studies, undertaken in connection with the subject of rupture of the uterus,[2] have at least thrown a stronger light upon the true anatomy of the womb, and have pointed out relations between the body and neck of that organ which it is very important to understand, and which fix for the uterine body a limit not hitherto assigned to it, and discover in the cervix a most astonishing capacity for increasing all the dimensions of its cavity. He has ascertained that the latter, in addition to the transverse distention which is accurately measured by the size of the fœtal head, may be so stretched as to attain a length even of twenty centimetres, or eight inches. The mechanism by which this effect is produced is clearly stated in the reference just given. But I would also bear in mind the possibility of finding a predisposing cause and an efficient factor in some defect in the quality of the cervix, in some want of elasticity or cohesion which may be inherent, or may have been acquired as the result of some pathological process.

The opinions of Bandl seem reasonable and consistent, and inevitably lead us to the conclusion that the constriction which was the cause of so much perplexity and embarrassment in the difficult labors which have been detailed was simply the internal os, and that of the two chambers into which the cavity of the womb was thought to be divided the lower one was contained wholly in the uterine neck, and was bounded by a wall of cervical tissue, of which the tenuity in some instances must have been extreme.

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[1] Obstetric Clinic (1868), chapter vii.

[2] See page 11 of this volume of the JOURNAL, January 3, 1878.

The same writer cites a case in which the os internum was as high as the umbilicus; the cervix was as thin as paper and so enormously stretched that it covered more than half the fœtus. The presentation was by the face. Forceps failed, and after craniotomy a child was extracted which weighed a little more than eight pounds. On the fourteenth day the woman left the hospital well.

Little need be said of the diagnosis of the condition in question; the hand once brought in contact with it, externally or internally, any mistake would seem to be impossible in the face of such well-defined characteristics. The only thing to be insisted upon is the importance of an early recognition. The expectant method has no place here. Expectation will not terminate in delivery, but will lead to disappointment, and perhaps to death. Even a careless eye cannot fail to perceive that the uterus is practically disabled for the reason that its force is misapplied; it is powerless to relieve itself or to assist us. Its whole energy, instead of being utilized for the expulsion of its contents, is expended upon the useless and dangerous elongation and attenuation of the cervix.

The discouraging difficulties which array themselves in connection with treatment cannot have escaped attention. Passing from the simpler to the more serious, all the ordinary obstetric means and manœuvres were successively called into requisition, most of them to be abandoned for another trial of some method already laid aside as insufficient and unsatisfactory. Anæsthesia seemed to bring no advantage to the accoucheur, excepting that it reduced the patient to the state of non-resistance. And the results, whatever they may have have been in each case, were attained only through the exhibition of considerable force, and by dint of a resolute and persevering effort which exerted itself in a direction that was more or less subject to change. I do not see that any other rule of management can be laid down. The practitioner can only give due heed to the suggestions which come of a given exigency, and can then do no more than make an intelligent use of the remedies and expedients which have been placed in his hands by a profession for the imperfections of which he is not individually responsible.

While my knowledge of the subject under consideration was restricted to what I had learned from the four cases which I now report, I had a very strong desire to listen to the criticisms which might be made by some obstetrician of sound judgment and mature experience, and to know how he would receive the proposition that these cases, which may properly be called desperate ones, should be treated by cæsarean section, with antiseptic accessories.

The obstetric art has from time to time found misfortune and reproach in those cases in which women have died in labor, not from hæmorrhage, or convulsions, or exhaustion produced by coexisting diseases, but from the impossibility of delivering them with sufficient celerity; and here arises a question that has more of a speculative than a practical character: In what proportion of these cases has this strange deformity of the uterus been developed as an unknown and unsuspected element?

RECENT PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE.

BY A. L. MASON, M. D.

The Hypodermic Injection of Dialyzed Iron in Chlorosis. — Dr. Da Costa [1] reports a case of chlorosis treated by subcutaneous injections of dialyzed iron. The patient, a girl of twenty-one, had suffered for several months from palpitation, dyspnœa, headache, and œdema of the feet and legs. There was marked pallor, and the menses had been arrested for three months before she entered the hospital. An inorganic systolic murmur was heard at the base of the heart, and a loud venous hum over the jugulars. The relative proportion of white to red blood corpuscles was normal, though there was a slight deficiency in the red corpuscles. By the daily injection of from fifteen to thirty minims of dialyzed iron, at first diluted, later undiluted, as it was found that no irritation of the skin was caused, in a little more than two weeks the patient regained comparative health. Menstruation returned, the murmurs became faint, color and strength came back, the appetite was good, and the bowels were regular. Dr. Da Costa judges from this single instance that the same method of treatment will prove valuable in cases where constipation, headache, and disordered digestion preclude the internal use of iron in the ordinary forms, or where the stomach does not retain it. All other preparations are too irritating for hypodermic use. He suggests that iron introduced in this manner may still be worth trying in cases of pernicious anæmia.

If the small quantity of dialyzed iron (from fifteen to thirty minims daily) employed in the treatment of this patient were the chief cause of her rapid improvement, it would be of interest to know what becomes of the large doses (from a drachm to half an ounce two or three times a day) recommended by other writers, and why moderate doses given in the usual way often fail to produce the effect of Quevenne's iron or the more astringent salts.

Professor Bouchardat,[2] having been requested to express his views upon the merits of dialyzed iron, says that in his opinion the preparation called by this name (although it does not pass through the dialyzer) is absorbed with difficulty, and under the influence of small quantities of alkali, acid, and various substances contained in the food forms an insoluble compound. Until clinical experience shows the contrary, he thinks that it should be regarded as an almost inert ferruginous preparation. Professor Depaire of Brussels is quoted as holding the same view.

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[1] Philadelphia Medical Times, March 2, 1878.

[2] Bulletin générale de Thérapeutique, January 30, 1878.

Progressive Pernicious Anæmia. — An editorial article in *The Doctor*[1] enters a protest against the attempt, said to have been made by Gusserow, Biermer, and others, to establish a new form of disease without any special anatomical lesion, characterized by a single symptom only, or by a group of symptoms which are common to several diseases. The writer regards this as a retrograde movement tending to check investigation as to the true nature of the cases in question. It is doubted whether the coexistence of progressive anæmia (accompanied by pallor, emaciation, and debility) with diarrhœa, dyspepsia, the puerperal state, hæmorrhages, febrile paroxysms, fatty degeneration of certain parts of the heart, or changes in the lining membrane of blood-vessels can be held to occur with sufficient constancy to warrant regarding the anæmia as the essential morbid process. It is granted that this may be a convenient method of associating clinically cases which resemble each other in symptoms, but the writer thinks that more careful observation will differentiate some of the morbid states, and assign them their true position. He is inclined to agree with the French authorities, who for the most part entirely repudiate the idea that such a disease as essential pernicious anæmia exists. M. Brissaud is of the opinion that there is nothing which can be called pathognomonic of this affection, no constant anatomical lesion, and nothing characteristic in the phenomena observed. M. Ricklin[2] has criticised all the published cases, and has attempted to show that all are examples of well-known diseases. All cases which have recovered are rejected as being neither progressive nor pernicious, and all cases in which there was no autopsy are thrown out. Then puerperal chlorosis, unrecognized cancer, fatty heart, interstitial nephritis, alcohol, etc., are held to play important parts in some of the cases reported. Finally, those cases in which a considerable accumulation of leucocytes in the marrow of the bones has been noticed are regarded as instances of myelogenic leucæmia, — a pathological relationship which was brought prominently forward by Dr. Wm. Pepper, of Philadelphia, some years ago.[3] It is thought also that examination of the intestines would discover in some cases the intestinal leucæmia described by Béhier. The conclusion is that the anæmia is only a symptom, and as such should not be endowed with a morbid entity.

It is true that in these cases no constant organic lesion may be found, but the later researches of Dr. S. T. Sörensen[1] at a public hospital in Copenhagen seem to show a deep-seated disturbance of the blood-making function, the remote origin of which must be uncertain until the organs or systems which preside over blood-production are more definitely determined. Dr. Sörensen has made a very careful and valuable report of eleven fatal cases of extreme oligæmia which came under his observation during the previous year and a half. In ten cases frequent examinations of the blood, after the method of Malassez, were made at different times during the disease. The color was always very pale, and a progressive diminution of red globules was noticed until their number was reduced to one fourth, one tenth, and even one twelfth of the normal standard. Death was found to be imminent when there were less than five hundred thousand red corpuscles to the cubic centimetre (about five millions being the number estimated in healthy persons), often earlier. The globules varied greatly in size and form, and the change was in them, not in the serum. The usual symptoms were observed. There was almost always retinal hæmorrhage. The cases ran sometimes an acute, sometimes a more chronic course, and at the autopsies in nine instances the following changes were found: universal anæmia, granular degeneration of glandular tissue in the liver, kidneys, and supra-renal capsules, fatty degeneration of the heart and inner coat of the aorta, and capillary hæmorrhages. These alterations were thought to be due simply to mal-nutrition dependent upon impoverished blood. In three cases there was chronic endocarditis with dilatation, and in three pulmonary emphysema and œdema. Examinations of the bone-marrow in three instances gave negative results. Seven of the patients were men, *four only were women*, and their previous conditions in life gave no clue to the causation, except in one instance in which the invalid attributed her state to fatigue and grief at the loss of a sister. Six were between the ages of forty-five and fifty-four years, and of the others two were twenty-three, one sixty, one sixty-one, and the oldest sixty-eight. The microscopic examination of the blood was, in all cases, sufficient o establish the diagnosis, which was confirmed by the autopsies, although the author thinks that in some rare forms of chlorosis and of secondary anæmia the blood may present similar appearances. Transfusion was tried in one case, but no treatment was of any avail.

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[1] February 1, 1878.

[2] Gazette médicale de Paris, Nos. 24 and 25, 1877.

[3] American Journal of the Medical Sciences, October, 1875, and April, 1877.

Seventy-Four Cases of Scarlatina. — Dr. W. E. Bullard[2] gives an account of seventy-four cases of scarlatina treated during the year 1877, of which sixty-one recovered and nineteen died, a mortality of 17.5 per cent. Forty-nine cases were mild, and twenty-five grave. Two cases, two and three years of age respectively, which were ushered in with severe convulsions followed by coma, died within twenty-four hours, before the appearance of the rash. Other children in the same families had the disease at the time, and marked redness of the fauces had been observed in these two patients for several days. In thirteen cases which were watched during the stage of incubation the earliest symptom noticed was this deep-red color of the throat. The child two years old who had convulsions at the onset, with a temperature of 105° F. in the rectum, was treated with the wet pack while still in a state of coma, and the dangerous symptoms all disappeared, the patient becoming cooler and remaining so for several hours, when the convulsions returned, and the child died. The packs had not been renewed as directed. The temperature, which was carefully noted in all instances, rose to 106° F. in five cases, three of which were fatal. There were six deaths from the extreme virulence of the throat affection, which assumed a diphtheritic character, with great glandular enlargement, in five instances, the immediate cause of death being septicæmia and exhaustion. Three children died of acute desquamative nephritis. Cool bathing or sponging with tepid water was used with advantage in six cases, but the cold tub-bath (60° F.) was tried in two cases only. In these the baths and wet packs were employed alternately at intervals of about two hours for four days. The temperature was thus reduced from 106° to 102°, the pulse from 130 to 100. One case recovered, but the other died from diphtheritic complications and septicæmia on the twenty-first day.

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[1] Nordiskt medicinskt Arkiv, Band ix., Nos. 14 and 20, 1877. Bulletin de la Société de Médecine de Gand, January, 1878.

[2] New York Medical Journal, March, 1878

The following prescriptions were thought to exert a favorable influence in modifying the course of the disease: —

℞ Potassæ chloratis	ʒ ss.	
Glycerine	fl ʒ ss.	
Aquæ calcis	fl ʒ ijss.	M.

S. A teaspoonful every hour or two.

In diphtheritic or bad anginose cases: —

℞ Tr. ferri chlorid.	ʒ i.	
Glycerine,		
Aquæ	āā ʒ i.	M.

S. A teaspoonful alternately with the former every hour or half hour.

In cases which required it a spray of carbolic acid and lime-water, and syringing the nares with lukewarm salt water, were found beneficial.

Notes on the Slow Pulse sometimes seen in Jaundice. — **Dr. J. Wickham Legg**[1] gives the results of experiments made upon animals with a view to determining the cause of the slow pulse in jaundice. This phenomenon being allowed to be due to the biliary acids, since the bile pigment and cholesterine do not produce this effect, the action of these acids either upon the vagus, the muscular walls, or the ganglia of the heart has been held to account for the diminished frequency of the pulse. But Dr. Legg states that the same result follows when the influence of the vagus is removed, and that the biliary acids have no physiological action on muscular tissue; therefore he concludes that the slow pulse must be owing to the effect of the acids upon the cardiac ganglia. It is not very common, but may occur in all forms of jaundice, the pulse-rate varying from 21 (Frerichs) to 40 or 50 in extreme cases, but it is usually as high as 60. Out of twenty-seven patients with simple jaundice Dr. Legg noticed this peculiarity in four cases only.

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[1] Medical Times and Gazette, February 23, 1878.

(*To be concluded.*)

PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

E. G. CUTLER, M. D., SECRETARY.

DECEMBER 24, 1877. *Chronic Ulcers of the Stomach and Duodenum; Old Pyelonephritis.* — DR. B. S. SHAW gave the following history: The patient, an iron merchant sixty-six years of age, married, and of temperate habits, had never suffered from any serious illness since early life, when he had some lung difficulty. For many years he had been dyspeptic and habitually constipated. For the past two years he had been depressed and despondent about his business, without cause. Three months ago he had a severe attack of colic, accompanied by obstinate constipation, flatulence, acidity of stomach, and pain; tenderness was not present. He vomited a little mucus and some undigested oysters which he had eaten a short time before. Since then he had been constantly melancholic, and thought he was unable to eat solid food; he had therefore lived on beef tea, gruel, and farina, and had gradually lost flesh. There was no pain, tenderness, or vomiting after the attack just mentioned. Perhaps six or eight times in the past three months he had been induced to swallow a small portion of beefsteak or tripe, and had daily taken a small piece of cracker in his beef tea. It was impossible to induce him to eat more solid or nourishing food, however, in spite of the fact that he said he suffered no distress in his stomach, either when it was empty or after eating. He complained of nothing, and only begged to be let alone. There had never been any history of renal or vesical trouble.

Dr. E. G. Cutler performed the autopsy and showed the stomach and one kidney. The body was found to be in an extreme state of emaciation. On opening the stomach, the mucous membrane was thickened and generally of a brownish color; there was an increased amount of tenacious mucus covering it, and in several places on the anterior and posterior walls there were cicatrices of former ulcerations. One fresh, round, superficial ulcer, which involved only the mucous coat, was found near the pylorus. There were two round ulcers in the upper part of the duodenum, which were opposite each other and about the size of the end of the thumb; there was loss of the mucous and muscular coats, the serous coat forming the floor of the ulcer.

The left kidney was five inches long, two and a half inches broad, and two inches thick; on section it appeared healthy. The right kidney was reduced to a mass of half a dozen closed sacs about the size of the fist. The wall of the sacs was about two lines in thickness, and was of an opaque white color, little or no renal structure being apparent; there were several imperfect septa which nearly separated the sacs, and which, starting from the periphery, converged towards what was once the pelvis of the organ. The ureter was normal up to the pelvis of the kidney, where occlusion had occurred. A turbid, milky fluid containing a few caseous masses filled the sac; under the microscope this fluid was found to be old pus cells, fatty granules, granule-corpuscles, and cholesterine plates.

Fatal Poisoning by the Inhalation of Lime-Kiln Vapors, Carbonic Oxide Gas predominating. — DR. DRAPER reported the case as follows: At six o'clock in the morning of December 21, 1877, a workman employed at a lime-kiln found upon the top of the stack of furnaces, and lying between two of the fires, the dead body of a man about forty years old. When and under what circumstances the deceased went there is not known; but it is presumed that he was familiar with the place, though not with its dangers, and, the night on which the accident occurred being a frosty one, he was tempted by the warmth of the situation and by its ready accessibility to resort to it for lodging. This lime-kiln consists of a stack of four furnaces, arranged in a row; each furnace is of the shape of an inverted sugar-loaf, the upper and larger end being exposed to the air, a low brick wall or parapet being the only inclosure at the top of the structure. Upon this wide upper mouth of the furnace alternate layers of coke and oyster shells are shoveled, and slow combustion is maintained night and day, the product being removed from below the fire and disposed of as lime at the gas-works, where it is used in the process of purifying the gas. It was on the top of the warm partition wall between two of these slow fires that the man selected his resting-place some time after ten o'clock of the evening before his dead body was discovered. When found, the body was lying upon its left side, close to the edge of the furnace mouth, so close, in fact, that the right hand, which lay across the breast and extended over the burning mass, was charred from the finger-tips to the wrist, while the skin of the left side of the face — the forehead, eyelids, nose, cheek, and lips — was baked so that it was hard, dry, and inelastic, like parchment. The cuticle at the bend of the left elbow and upon the outer aspect of the left thigh was reddened in patches, and could be stripped off, leaving the underlying true skin rosy red in color; and there were other reddened patches from which the cuticle could not be loosened. But in no instance was the epidermis raised into a true vesication, — a fact tending to strengthen the presumption that the burning was post mortem. Another remarkable fact was that neither the hair nor the clothing showed any mark of fire; the epidermis of the scalp, indeed, was so affected by the heat that in raising the head a handful of hair came away, but the hair itself was of natural appearance.

An autopsy was made twenty-eight hours after the finding of the body. Externally, the body presented nothing remarkable beyond the appearances caused by the heat as above described. The internal appearances were significant. Without detailing them specifically, they may be summarized as follows: —

(1.) There was remarkable hyperæmia of all the organs, except the spleen. The brain, the lungs, the heart and its cavities, the liver, the kidneys, stomach, and intestines presented varying degrees of congestion, from complete engorgement, as in the right side of the heart, to fine punctate injection in the mucous lining of the stomach and intestines. The vessels of the cerebral meninges were filled, and the puncta cruenta of the cut surface were well marked. Of the intestines, the duodenum was most intensely reddened, but there was no portion in which the appearance was perfectly normal in this respect.

(2.) The character of the blood was peculiar. Its consistence was uniformly fluid; there were no clots. Its color was, however, its most remarkable quality, the shade being a bright vermilion or lobster-red. In both color and consistency it resembled quite nearly the carmine ink of the stationers. This character gave to the injection of the intestines and to the muscular tissue a brilliancy of coloring that was very striking. It was also persistent, no perceptible alteration in the shade occurring during the two hours of the autopsy. Moreover, the color of the blood was the same in all parts of the circulation.

The question may fairly be asked if it is possible, in view of the composite character of the products or gases of the combustion of coke, to fix upon the offending agent in this case to the exclusion of the others? Recognizing the extremely poisonous character of carbonic oxide gas and the opportunity for its abundant evolution in the present instance; recognizing especially the peculiarly striking and characteristic alteration in the color of the blood, due, as is held, to the formation of a fixed compound of carbonic oxide and hæmoglobin, I am led to the conclusion that in this case there is little doubt that the carbonic acid gas, the vapors of sulphurous acid, and the organic products from the oyster shells were all inferior in their toxic action to the carbonic oxide which was with them.

Dr. T. B. Curtis said that inhalation of the fumes of burning charcoal was a favorite method of suicide in Paris, and he believed that this bright red color had been noticed in such cases. He further remarked that there was a theory prevalent in Paris that heated cast-iron stoves become pervious to carbonic oxide gas.

Dr. Draper mentioned that the late Dr. George Derby had also maintained that cast-iron, when heated, was pervious to carbonic oxide, and he therefore had a wrought-iron furnace in his house.

New Urethrotome. — **Dr. T. B. Curtis** showed a new urethrotome, on the subject of which he made the following remarks: Much attention has been devoted of late to wide or incipient stricture of the urethra. Until a few years ago it was not customary to admit the existence of stricture in any case unless micturition had begun to be distinctly impeded. It has, however, been shown that strictures are in most cases of very slow and gradual formation, and that an early stage of long duration exists, during which the act of urination is not appreciably disturbed. The chief, often the only symptom which then attracts attention is gleet. In the great majority of cases of gleet, if not indeed, as is maintained by Dr. F. N. Otis, in all cases, a careful examination with the bulbous bougie shows the presence of one or more urethral contractions. These are generally situated in the anterior portion of the canal, and often have a calibre but slightly inferior to that of the healthy, uncontracted portions of the urethra. The slight contractions existing in such cases are the cause of the gleet, which is alone complained of. If we wish to cure the latter we must first cure the former by restoring the full normal calibre throughout the passage.

The difficulty or impossibility of curing gleet by means of medicinal agents alone is well known to all practitioners, and is illustrated by a *boutade* of Ricord's. That experienced specialist once said that he knew well the punishment which was in store for him should he be sent to hell after death. He was there to find himself surrounded by sufferers from gleet, from whose supplications and reproaches there was to be no escape. If, however, Dr. Otis is correct in his views regarding the cause of gleet, this disease need no longer be the opprobrium of the surgeon. It is only necessary to cure the incipient stricture and the gleet will disappear.

In the majority of such cases gradual dilatation by means of steel sounds is no doubt the treatment to be preferred. Not unfrequently, however, this method proves ineffectual, many of the wide anterior strictures in question being found to belong to the class of strictures called "resilient." They are, moreover, too elastic to admit of rapid dilatation or divulsion. In such cases what course is to be pursued? Shall the surgeon persevere in the treatment by bougies, indefinitely, against hope? Shall he again rehearse the already exhausted list of balsamic drugs and injections? Or must he resign himself to defeat, and assure his patient that the drop of discharge is of no consequence and requires no further treatment?

Another too much neglected remedy remains, namely, internal urethrotomy. This operation is in all cases much less dangerous than seems generally to be supposed, and when practiced in the anterior portion of the urethra it appears be entirely without risk, as was recently stated by Sir H. Thompson. "The nearer a stricture is to the orifice of the urethra the more necessary it is to cut, and the safer it is to do so."

This urethrotome, which was made for me by Messrs. Leach and Greene, of this city, is designed for dealing with the wider class of strictures, ranging in calibre from 16 (French scale) upwards. It is generally recognized that the best means of determining the exact situation, calibre, and extent of contractions consists in the use of acorn-tipped or bulbous bougies. The safest urethrotome, on the other hand, is that of Civiale, which cuts on withdrawal, from behind forwards. In my urethrotome the advantages of these two instruments are combined. It consists of a series of acorn-shaped bulbs, nine in number, ranging in size from 16 to 34, which by a simple mechanism (a tip screwing on and off) can be readily adapted to a staff similar to that of Civiale's instrument. Each bulb has a slit through which the blade is made to protrude by drawing back the handle. By a simple device, more easily recognized than described, the surgeon can set the instrument beforehand, so as to regulate exactly the degree of protrusion of the blade and the depth of the incision according to the exigencies of each case.

In using the instrument, a previous examination with bulbous bougies having shown the exact situation and calibre of the stricture to be divided, a bulb must be selected which will just penetrate through and distend the contraction to be divided. This bulb is adapted to the staff, and the instrument is set so as to allow a sufficient issue of the blade. The instrument is then passed into the urethra until the bulb, having penetrated through and just beyond the stricture, is felt to be free, while on attempting its withdrawal it is slightly held. The blade is then made to issue, and the instrument is withdrawn until the protruding blade has traversed the stricture. The blade is then returned to its groove and the urethrotome is removed from the urethra. The subsequent treatment is that required in all operations for stricture.

The advantages of this urethrotome consist in the certainty and security with which the extent, depth, and precise situation of the incision can be regulated, and in the efficient way in which the diseased tissues, stretched around the distending bulb, are divided by the knife.

In conclusion, I must mention that since designing this urethrotome I learned that an instrument of a similar character, called the *bulbous urethrotome*, had been invented by Dr. F. N. Otis.[1] This instrument has movable bulbs ranging in size from 20 to 40. It differs from mine in the mechanism by which the bulbs are changed, and in that which governs the issue of the blade, as well as in other particulars. Dr. Otis seems, however, to have abandoned this instrument, using in preference his *dilating urethrotomes*.

JANUARY 14, 1878. *Multiple Urinary Calculi; Sacculated Bladder.* — DR. WARREN showed specimens of multiple calculi removed from a sacculated bladder after death. The patient, a shoemaker fifty-two years of age, had had symptoms of vesical disease for twelve years. The urine was alkaline, contained pus, and was passed frequently and with pain. An examination with a sound detected a stone. Some vesical fever followed the passage of the instrument, and the urine became strongly ammoniacal; an attempt was therefore made to wash out the bladder with warm-water injections, but the expulsive efforts were so great as to force out not only the water as fast as injected, but also the soft-rubber catheter employed. Finally, a small quantity was introduced at a time, but however often repeated it came away dark and foul in odor. All symptoms grew worse, the urine was passed in a putrid state, and the patient died on the ninth day after examination.

At the autopsy, the bladder was found to consist of four compartments, three of which contained calculi. In the central one was a large phosphatic stone nearly spherical and five centimetres in diameter. The other stones were about two centimetres in their longest diameters, and were somewhat flattened. They were dense, and probably consisted of urates. The walls of the bladder were much thickened, and there was a diphtheritic inflammation of its mucous membrane. The kidneys were large, soft, and contained small abscesses; the ureters were dilated.

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[1] A Description of Instruments, etc. By F. N. Otis. New York. G. P. Putnam's Sons. 1875. Page 7.

Dr. Warren also showed the heads of the two femora of a child three years of age, in whom excision of both hips had been performed for disease following scarlet fever. The first operation was performed on the right hip in September last, a large periarticular abscess being laid open at the same time. A drainage tube was left in. In November the left hip, which was also in an advanced stage of the disease, became much swollen, and a periarticular abscess in the neighborhood began to enlarge. The head of the bone was accordingly removed, and the abscess, being laid open, was found to communicate with the diseased joint-cavity by a small and circuitous opening. Buck's extension apparatus has been used occasionally. At the present time the child has gained considerably, although there is moderately high evening temperature persisting.

Coagulated Fibrin simulating Polypus of the Ear. — DR. J. O. GREEN showed the specimen, from a healthy man aged seventy-three years, who a short time after scratching the ear with a pin began to have violent pain and throbbing, which continued for twelve hours, and was then relieved by a profuse serous discharge. Examination showed inflammation of the tympanum, with rupture of the membrana tympani, and profuse, thin, serous discharge. The next day the serous discharge was still free, and the deeper meatus was filled by a red mass, freely movable, and simulating a polypus with a small pedicle; this was seized with the forceps, easily removed, and was found to be attached in the perforation. Under the microscope the mass showed a network of finely granular fibrillæ intermixed with occasional blood-corpuscles, and was evidently coagulated fibrin, the red color of which was due to the blood-corpuscles. On the third day of the inflammation another small mass had coagulated outside the perforation, and was removed; the tympanum had become filled nearly solid with the same mass, as was seen by the color and by touching with a probe; the serous discharge still continued. By the fifth day all discharge had ceased, and in two days more the perforation had healed. No pain was felt after the first day, and there was no complaint of subjective noises. The hearing had been most seriously damaged many years before by purulent tympanic inflammation, which had healed, but the slight degree of hearing left by the old disease was still further impaired by this inflammation.

A similar variety of exudation occurring in a previously healthy ear must, almost of necessity, produce a very serious interference with the functions of the tympanum from the adherence and subsequent organization of the fibrin on the conducting apparatus.

Severe Neuralgic Pain following Herpes Zoster. — DR. F. C. SHATTUCK read the case. In December, 1876, he had been consulted by a gentleman of about thirty-five years of age for violent neuralgic pain, starting from the space between the right scapula and the spinous processes of the vertebræ and extending down the arm into the fingers. The attack had already lasted several days, but had now become unbearable. Soon after the commencement of the attack the patient had noticed that the first two fingers of the right hand were numb, and that writing was thus rendered difficult. A fortnight before, there had been a similar attack of less duration and intensity, which had disappeared suddenly without treatment. Dr. Shattuck learned from the patient that in August, 1876, he had had an attack of zoster, which involved the whole circumference of the right side of the thorax, and was so severe in character as to have given rise to extensive ulceration, as was shown by the presence of a large number of small cicatrices. The treatment which was followed had not been such as could have caused the ulceration. A subcutaneous injection of morphia was immediately given with the desired effect; it became necessary to repeat it once on each of the two following days, and then the pain ceased altogether. Ten days or a fortnight later, however, the patient appeared again with a return of the neuralgic pain, and required one or two further injections. Brown-Séquard's anti-neuralgic pill was then substituted. The patient was obliged to take one of these occasionally during several weeks, but finally the pain left him altogether, and has never reappeared except about a month ago, when he had a twinge of pain in the same situation and of the same character which did not last more than half a minute.

Though neuralgia, as a sequel of zoster, is mentioned in nearly all the text-books on cutaneous disease, and in many of those on general medicine, Dr. Shattuck was still inclined to believe that it was by no means common. Hebra and Kaposi state that it is sometimes so severe and obstinate as to render life a burden to the unhappy subject of it. Dr. Wigglesworth had told him that in his experience pain was less prominent as a symptom of zoster in this country than in Germany. It is a curious fact that the irritation or inflammation which persists or recurs after a typical attack of zoster should never again manifest itself by the cutaneous eruption, though it not unfrequently does do so by neuralgic pain. Dr. Shattuck said he believed the remarkable case of the nurse in the General Hospital in Vienna, who had repeated attacks of the disease, remained the only one of the kind on record.

Dr. Greenough in commenting on the case said he had seen two cases in which neuralgia had followed herpes zoster. The result of his observations at the Boston Dispensary had been that the amount of pain in zoster was usually proportional to the age of the patient. Dr. Damon coincided with Dr. Shattuck's quotation of Dr. Wigglesworth's opinion that neuralgias following herpes were not common in this country.

Dr. Bigelow remarked that he had seen a patient, an old lady, in whom a deep, vesicular, herpetic eruption, lasting many months, had been followed by neuralgia shooting down from the cervical vertebræ into the arm.

Dr. Ayer spoke of a gentleman who had herpes on one side of the forehead, on the eyelids, and extending to the hair of the head; in this case the eruption was followed by pain more or less neuralgic in character, lasting for several months.

Dr. Williams had had three cases of pain following herpes frontalis; the pain was agonizing; in each case there had been considerable ulceration attendant on the herpes, which in two cases had been accompanied by a recurrent ulceration of the cornea. In both these cases there was also a recurrence of the neuralgia, in one several weeks, and in the other several months, after the first attack.

SOCIETY REPORTS.

THE present season has yielded the fruits of the labors of various medical organizations, which held their meetings in the spring, in the shape of annual reports. Foremost among these we notice the bulky volume of the national association, perhaps the most prominent feature of which is the fact that a greater amount of space is occupied by Massachusetts than any other State. This looks as if "harmony" were once more restored. We find the address of the president, Dr. Bowditch, who also contributes a brief paper on aspiration of the chest; two papers by Dr. Martin, one of which is a very elaborate report on animal vaccination, with illustrations; Dr. Marcy and Dr. Kimball also appear among the contributors. The names of Gross, Bozeman, and Hodgen show that the association is not without the support of prominent men. Dr. Sayre, we need hardly say, figures conspicuously with mechanical apparatus. This gentleman enjoys the rare honor of a biographical sketch by Mr. Henri L. Stuart (author of a similar article on Dr. Sims), with engraved portrait, in the *Virginia Medical Monthly* for January, which number contains the transactions of the meeting of the Medical Society of Virginia held at Petersburg in October. We approve of the principle which throws society work into the medical journals, but we find in this report evidences that the old form of a separate publication is still jealously adhered to, the journal being obliged to swallow this large fragment of "a volume" in a single lump. The craving for elaborate reports on the part of our societies is, we are glad to say, diminishing in direct ratio with the increased enterprise of our medical journals, and we hope the custom will soon become a thing of the past.

The handsome and carefully prepared volume of the New York State Society fails to give any internal evidences of a *raison d'être;* there are a number of elaborate papers, one, by Dr. Vanderveer, of Albany, on cleft palate being especially noteworthy, but none which might not have appeared more appropriately and much more promptly in the pages of a periodical. The same may be said of the Ohio State Medical Society Report, which is also before us. These volumes, when confined to their proper sphere, are no doubt useful; they should contain matters of special interest to members of the society, and full accounts of business meetings; they would also be a useful repository of presidential addresses and long obituary notices. They should occupy the place of a useful business document rather than aim to assume the plumage of an ornamental literary production.

MEDICAL NOTES.

—We have news of the recent death of Professor Dietl, of Krakow; of Regnault, the celebrated French chemist; of Becquerel, an equally renowned French physicist; of Ludwig Fleischmann, of Vienna; of Professor Ghinozzi, of Florence; of Professor Hirtz, a valuable member of the medical faculty of Nancy; and of Dr. Churchill, the distinguished obstetrician, who died in Ireland, January 31st.

— Efforts are being made in Russia to abolish the law which obliges the physician to visit any one who may call on him. As it now stands he who refuses to go is liable to a fine of from five to ten roubles for the first offense, of from ten to fifteen for the second, and of from fifty to one hundred for the third. Moreover, any physician so offending, who may be in the service of the government, is liable to dismissal. The worst of it is that the law is no dead letter, but is actually enforced. In 1869 a similar law was repealed in Prussia.

— A letter to the St. Petersburg *Med. Wochenschrift* states that Montenegro has no scientifically educated practitioners. The whole medical practice of this district is in the hands of one family, Jlitschkowitsch by name, whose scanty professional knowledge has been handed down from one generation to another. Ten members of this family are now engaged in the practice of surgery, which consists chiefly in the application of splints, frequent cauterization of recent wounds, and drainage of gunshot wounds with the use of tow. They know but little anatomy, and dread hæmorrhages. They remove enlarged glands, extract foreign bodies, and trephine; otherwise do no operations. Trephining has been done four or five times in the same individual, almost every slight injury of the head being supposed to require it. Prince Nicholas's private surgeon is a Frenchman, but he is not consulted by the people.

— At the Murray Royal Asylum for the Insane, Perth, Scotland, persons of both sexes are received for training as attendants. A system of pensions has also been established, after fifteen years' service, at rates based upon those of the Scotch civil service superannuation act of 1859, — the pensions not exceeding two thirds of the total money value of the office at the time of retirement. Both wages and pensions are made proportionate to the quality as well as to the duration of the service rendered.

— According to the *Journal de Médecine et de Chirurgie Pratiques* for February, 1878, Dr. Huques, of Nice, finds that one insertion of vaccine virus in each arm is better than a greater number of insertions, inasmuch as protection is equally well secured, and accidents, as of inflammations, etc., avoided. The protection, he maintains, is as perfect, since subjects on trial are as insusceptible to subsequent revaccination after one insertion as after six.

— The *Popular Science Monthly* publishes the following: A square metre of wall of a surgical ward in the Paris Hôpital la Pitié was washed, an operation that had not been performed during two years previously, and the liquid wrung out of the sponge was immediately examined. It contained micrococci in abundance, some micro-bacteria, epithelial cells, pus globules, and ovoid bodies of unknown nature. The sponge used was new, and had been washed in distilled water.

— The most recent official return gives the following rates of mortality per 1000 of the population of the principal foreign cities: Calcutta 45, Bombay 40, Madras 101, Paris 27, Brussels 25, Amsterdam 28, Rotterdam 26, The Hague 16, Copenhagen 21, Stockholm 25, St. Petersburg 34, Berlin 25, Dresden 22, Munich 34, Vienna 28, Buda-Pesth 43, Rome 22, Naples 28, Turin 30, Venice 27, New York 20.

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

NOTES OF PRACTICE AND PECULIARITIES OF TREATMENT.

Pelvic Peritonitis and Pelvic Cellulitis. — A full hypodermic dose of morphia and twenty grains of quinia internally are administered immediately after the appearance of the first symptoms. If the attack cannot be aborted in this way, the abdomen is painted with iodine and a poultice is applied. Keeping up the use of quinia, about thirty or forty grains should be given in the course of twenty-four hours. Large doses of morphia are also continued. If the woman be plethoric the morphia may be given by the mouth, with neutral mixture and wine of ipecac. In some cases tonics are demanded. If the attack lasts for more than a week and the local tenderness increases, a blister is applied over the spot of greatest tenderness. In later stages the following is a very excellent prescription: —

℞ Mist. glycyrrhizæ comp.	f℥ vi.	
Ammoniæ muriatis	ʒ ij.	
Hydrarg. chloridi corrosivi	gr. i.	
Tinct. aconiti radicis	gtt. xxiv.	M.

S. A tablespoonful in water every six hours.

Tetanus. — Systematic feeding of patients with liquid and strengthening food has been tried with excellent results. The food must be given at intervals of every two or three hours, and should consist mainly of milk with a small quantity of alcohol. In severe cases all solid foods should be avoided. As regards medicines, the patient must be brought well under the influence of the bromide of potassium by an initial dose of from two drachms to half an ounce, to be followed by from half a drachm to a drachm every three or four hours. To force sleep at night, give at bed-time thirty grains of chloral, with opium. Nitrite of amyl and chloroform should not be used steadily, but will stop violent spasms. Where there is much cerebral congestion a blister is applied to the back of the neck.

Ulcer of the Stomach. — Nitrate of silver, in the form of pills, is given in full doses half an hour before meals. If there be pain, opium, hydrocyanic acid, or chloroform will relieve it. An exclusive milk diet is the best. Solid food should be altogether eschewed. At the time of hæmorrhage, absolute rest must be insisted upon, and pieces of cracked ice and tannic or gallic acid should be taken internally. Morphia may be administered by the mouth and ergotin hypodermically. All food for the time being should be given by the rectum.

Amenorrhœa. — In such cases the very best results have been obtained by the constant use of the following pills: —

℞ Pulv. ferri sulphat.,	
Potass. carb. puræ	āā ʒ ij.
Mucil. tragacanthi	q. s.

M. et in pil. No 48 divide.

S. To be given daily in doses gradually increasing until three pills are taken after each meal.

This gives the large quantity of twenty-two and a half grains of the dried sulphate of iron per diem.

If these pills constipate, the following is an aperient mixture: —

℞ Pulv. glycyrrh. rad.,	
Pulv. sennæ	āā ℥ss.
Sulphuris sublim.,	
Pulv. fœniculi	āā ʒij.
Sacchar. purif.	℥iss. M.

S. One teaspoonful in half a cupful of water at bed-time.

Diet and Medication in Saccharine Diabetes. — The best diet for a diabetic patient is: for breakfast, eggs and any kind of meat or fish (except oysters), gluten bread, and tea or coffee with milk and without sugar; for dinner, tomatoes, lettuce, onions, spinach, string beans, meat, light sour wine, and lemons, or perhaps oranges, but none of the sweet fruits; for supper, about the same as for breakfast. None of the starchy foods, no alcohol, and no sugar should be allowed.

Among drugs opium is the most valuable. Of this a large amount can be taken daily without producing any of the symptoms of poisoning. In one case as many as seven grains were given per diem. This large amount of the drug had no deleterious effect further than the production of constipation. The opium directly, by diminishing all the secretions, or more probably by its action on the nerve centres, relieves the excessive thirst and voracious appetite, and diminishes the amount of urine and of sugar in the urine. In one case the daily amount of urine was reduced from twenty-eight to eleven pints per diem. The total quantity of contained sugar was also reduced.

Ergot, which acts in simple diuresis almost like a specific, may be used in saccharine diabetes with much profit in doses of one drachm of the fluid extract four times a day. Where the skin is rough and dry, jaborandi is of great value by reason of its powers of diuresis. If jaborandi be used, the opium and ergot must be stopped for the time being.

Chorea: A New Treatment. — In connection with a recent case of chorea in an adult female, the drug known as skunk cabbage, or dracontium, has been tried with good results. A saturated tincture of the rhizoma was prescribed in doses of ninety drops thrice daily. The supply of this drug for use should be obtained at the markets, and not at the drug stores. The best time to lay in a stock of dracontium is in the fall, and it should be at once made up into the form of a tincture. The root must not be dried before using. The effects of the dracontium are probably due to some volatile principle which it contains.

Hæmatoma in Douglas's Pouch. — The patient must be kept absolutely quiet, and astringent drinks, such as sulphuric acid, lemonade, etc., be administered. Opium enough should be given to lull the pain and keep the patient thoroughly quiet. For a number of hours following the attack very slight nourishment is allowed. Stimulants should be refrained from, and the patient kept as low as possible until all immediate danger from peritonitis has passed away. The vagina should be packed with ice, or if desirable ice may be placed upon the abdomen.

Chrysophanic Acid in Chronic Psoriasis. — An ointment with the strength of one drachm of the acid to one ounce of simple cerate was used. This ointment was well rubbed into the skin of the whole body every evening. After this treatment had been persevered in for four days the skin became much paler and smoother, and the scales began to disappear.

Ergot in Diabetes Insipidus. — The patient was put upon an initial dose of half a drachm of the fluid extract thrice daily. The dose was gradually increased, first to one and then to two drachms. There was almost immediately a great reduction in the quantity of urine passed daily, from ten to three pints. This is the third case in which the ergot has been so successful in rapidly reducing the daily quantity of urine passed.

Jaborandi in Pleural Effusion. — One drachm of the fluid extract of jaborandi was ordered four times daily. The results were truly marvelous. The temperature has fallen to normal, and is steady there; the chills, pain, and dyspnœa have entirely gone, the pulse and respiration are normal, the physical signs of the effusion have all disappeared. The jaborandi has caused profuse diuresis and diaphoresis. (The French clinicians have of late years used this drug with great success in cases of obstinate pleurisy.)

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TREATMENT OF EPILEPSY.

Mr. Editor, — In an article on The Brown-Séquard Treatment in Epilepsy, which was published in the Journal December 27, 1877, there occurred a typographical error in the second line of the principal prescription. As the correction which appeared in the following number of the Journal was overlooked by many, will you please republish it?

The prescription should be written as follows: —

℞ Sodii bromidi,	
Potassii bromidi,	
Ammonii bromidi	āā ʒ iij.
Potassii iodidi,	
Ammonii iodidi	āā ʒ iss.
Ammoniæ sesquicarb.	℥ i.
Tinct calumbæ	f℥ iss.
Aquæ destillat.	ad f℥ viij. M.

Full dose: one and a half drachms before each meal, and three drachms at bed-time.

Yours, James B. Ayer.

March 8, 1878.

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Obituary. — The following resolutions were passed at the last meeting of the New England Psychological Society: —

Resolved, That in the decease of the late Dr. John E. Tyler, of Boston, Mass., this society has lost one of its most earnest and most useful members; that we have been deprived of a cheerful, cordial, and ever agreeable associate; and that the people of his adopted city have cause to regret the departure of one who could minister to a mind diseased with intelligence, skill, and a warm and sympathetic heart.

Resolved, That we extend to his afflicted family the acknowledgment of our heartfelt participation in their sorrow.

Resolved, That Dr. J. P. Bancroft be appointed to prepare a memorial of our deceased friend and present it at a future meeting.

Resolved, That the secretary furnish a copy of these resolutions to the afflicted family.

COMPARATIVE MORTALITY-RATES.

	Estimated Population, July 1, 1878.	Deaths during week ending March 9, 1878.	Annual Death-Rates per 1000 living.		
			For the Week.	For the Year 1877.	Mean of ten Years, '68-77.
New York.	1,093,171	571	27.16	24.32	28.71
Philadelphia.	876,118	320	18.99	18.80	21.54
Brooklyn.	549,438	176	16.66	21.51	25.50
Chicago.	460,000	135	15.28	17.83	22.39
Boston.	375,476	162	22.43	20.10	24.34
Providence.	100,000	49	25.48	18.81	19.20
Lowell.	55,798	29	27.03	19.09	22.50
Worcester.	54,937	16	15.15	14.07	22.30
Cambridge.	53,547	14	13.59	18.69	20.83
Fall River.	53,207	24	3.46	21.35	24.96
Lynn.	35,528	11	6.11	20.42	19.67
Springfield.	33,981	5	7.66	16.04	19.77
Salem.	27,140	13	4.90	20.38	21.15

Books and Pamphlets Received. — Illustrations of Clinical Surgery, consisting of Plates, Photographs, Wood-Cuts, Diagrams, etc. With Descriptive Letterpress. By Jonathan Hutchinson, F. R. C. S. Philadelphia: Lindsay and Blakiston. 1878. (A. Williams & Co.)

Consumption and its Treatment with the Hypophosphites. McArthur.

Statistics, Medical and Anthropological, of the Provost-Marshal-General's Bureau, derived from Records of the Examination for Military Service in the Armies of the United States, during the late War of the Rebellion, of over a Million of Recruits, etc. Compiled under the direction of the Secretary of War by J. H. Baxter, A. M., M. D., Colonel, etc., U. S. A. In two volumes. Washington: Government Printing Office. 1875.

The Yellow Fever at Havana: Its Nature and Treatment. By Charles Belot.

Brewers' Argument before the Joint Special Committee on the Liquor Question, February 14, 1878.

Two Lectures. I. Lectures, Books, and Practical Teaching. II. Clinical Instruction. By W. T. Gaidner, M. D. Glasgow. 1877.

Observations on the African Yaws, etc. By Joseph Jones, M. D. (New Orleans Medical and Surgical Association.)

Compulsory Vaccination. By Joseph Jones, M. D. (New Orleans Medical and Surgical Journal.)

Heart Clots. A Report of Three Cases (two long existing), and the Ætiology, Diagnosis, Prognosis, and Treatment, of Cardiac Thrombosis. Analysis of Sixty-Eight Cases. By Martin L. James, M. D. (Reprint from the Transactions of the Medical Society of Virginia.) 1877.

Report on Heating and Ventilation. Prepared for the Trustees of the Johns Hopkins Hospital, Baltimore, Md. By John S. Billings, Surgeon U. S. Army. 1878.